

S 603

. A4



6 603
A4
Copy 1

20

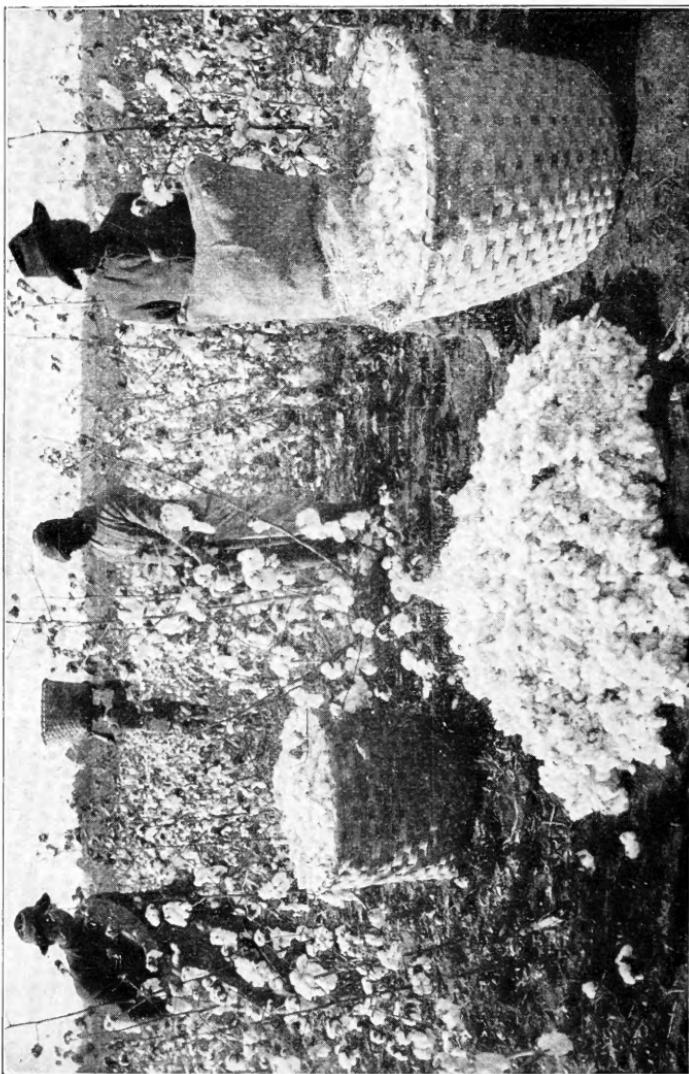
DIVERSIFIED FARMING

in the
Cotton Belt

by George H. Alford



Cotton the great crop of the South



DIVERSIFIED FARMING IN THE COTTON BELT

By GEORGE H. ALFORD

SPECIAL NOTICE

This department has issued booklets on "For Better Corn in the Cotton Belt," and "Getting a Start with Alfalfa in the Cotton Belt," and will in the future issue booklets on such subjects as cowpeas, soy beans, sweet clover, peanuts, velvet beans, rice and sugar cane.

The purpose of this little booklet is to offer some suggestions of a general nature on diversified farming.

Published and Copyrighted
by the

AGRICULTURAL EXTENSION DEPARTMENT
INTERNATIONAL HARVESTER COMPANY OF NEW JERSEY
PROF. P. G. HOLDEN, Director
CHICAGO, U. S. A.

Note.—All or any portion of this booklet may be reproduced by giving proper credit to the publishers.

CONTENTS

	PAGE
Some Reasons for Diversification of Crops - - - - -	3- 6
How to Diversify Crops - - - - -	7-11
Value of Leguminous Crops - - - - -	12-16
Lespedeza or Japan Clover - - - - -	17-20
Pastures - - - - -	21-24
Growing Oats - - - - -	25-29
Corn Growing - - - - -	30-33
Draft Horses and Mules - - - - -	34-38
Pork Production - - - - -	39-42
Live Stock Growing - - - - -	43-47
Literature - - - - -	48-49

APR 13 1914

B. O. 4

© CLA 372386

201

Some Reasons for the Diversification of Crops

Most Efficient Means of Establishing a Permanent System of Agriculture—One Crop System Impoverishes Not Only the Soil, but the People who Live Upon it.



George H. Alford

The most real and vital problem before us just at this time is to work out a safe and sane system of farming; one that will include crops to enrich instead of wear out our lands; one that will include plenty of good live stock to consume the surplus products and the leguminous crops that must be grown to enrich the land and to make manure to still further enrich the land; a system of farming that will grow the necessary corn, oats, wheat, rice, sugar cane, vegetables, fruits of all kinds, poultry, hogs, mules, horses, cattle, sheep, and other live stock for home use and to sell at a price that the people in our towns and cities can afford to pay.

Bad Effects of Exclusive Cotton Culture

The too exclusive culture of cotton has exhausted the humus, the life giving principle in our soils; the washing of the clean cotton fields has gone on to such an extent that millions of acres of the best land in the Cotton Belt have been made non-productive. The too exclusive culture of cotton makes it necessary to send the money obtained for cotton north to pay for corn, oats, pork, dairy products, mules, horses and other farm products. The too exclusive culture of cotton has caused over-production and thereby forced the price far below an equitable one so that there has been but little more than a bare living for cotton farmers. The too exclusive culture of cotton established the credit system. As long as our farmers raised their supplies at home there was no necessity for the credit system. The too exclusive culture of cotton compels us to buy on credit and dump all of our cotton on the market in the fall in order to satisfy our creditors and this forced selling beats the price down.

If these statements be true why have we not practiced diversification more generally long ago? Many say that the farmers have been compelled to plant cotton to get credit and that the low price for cotton which so long prevailed made it impossible for the farmer to get out of debt and go forward unhampered on an independent basis. This is no doubt true of thousands of farmers.

There are of course, numerous reasons for the too exclusive culture of cotton, but the argument used by most cotton farmers is that cotton is the most profitable crop to grow and that the larger the area in cotton the larger the profits. These cotton farmers usually show by figures that an acre of land that will grow forty bushels of corn will grow one bale of cotton and that the cotton will sell for more money than the corn.

The Problem of Maintaining Soil Fertility

Now come let us reason together for a few minutes. The success of any system of farming cannot be judged by the crops or the net earnings for one year or for five years. Any system of farming that impoverishes the land is a miserable failure no matter what the profits may be for one year or for five years. Our problems largely depend upon maintaining soil fertility and for this reason any system of farming that causes a decline in the fertility of the soil is a shame and disgrace to our farmers.



Oats in a three year rotation with cotton and corn

Our greatest asset is the fertility of our soil. Just in proportion as our soils are worn out in that proportion is our prosperity diminished. No living man has ever acquired the art of growing good crops of grain, grasses, cotton, or vegetables on poor land. Poor soil always means small yields; small yields always mean poor people, and poor people always mean the credit system, very little education, uncomfortable homes, poorly equipped farms, and in fact all that retards civilization.

In passing, permit me to suggest that land that will make one-half to three-fourths bale of cotton per acre on the average, one year with another, will make thirty bushels of oats and twenty bushels of soy beans or two tons of lespedeza hay. The oats and soy beans or lespedeza hay will sell for more cash than the cotton. These crops and corn and peas used in a rotation will surpass any one crop system because the fertility of the soil is increased when

phosphoric acid is applied annually while with the too exclusive culture of cotton the fertility rapidly decreases.

Diversification Destroys Insect Enemies

The most destructive and energetic insect that the world has ever known is gradually covering the Cotton Belt. There is one hope and only one hope for the farmers—that is the diversification of crops. The adoption of a sane and safe system of farming—one that will grow grasses, leguminous crops, oats, corn, hogs, sheep, cattle, mules, horses, and some cotton will solve the boll weevil problem.

The credit system is the curse of the Cotton Belt. It sweeps the earnings of toil from the masses into the coffers of the few. Some years ago the Commissioner of Agriculture of Georgia after careful inquiry of several hundred found that the average rates charged the farmers for extension of credit from April and May to October and November was fifty-four per cent per annum, over and above the cash price. Wives and children were compelled to work in the heat and cold from January until December to pay the fifty-four per cent credit profits. Diversification of crops will practically abolish the credit system.

Grow Rather Than Import Products

We are sending millions of dollars to other sections of the country every year to pay for farm products. Diversification of crops will keep this money at home, our banks will be full to overflowing and the rate of interest lowered to say, six per cent, because of the abundance of money. Then we will have the necessary money to pay good teachers better salaries to teach longer terms; money to build comfortable homes and good roads and to properly equip our farms.

The growing of every farm product necessary for home use will curtail the production of cotton, raise the price to at least twelve cents per pound and keep the cotton money at home. This will mean prosperity and life on the farm will then be free, unfettered by the bonds of promissory obligations and our position in the world made conspicuous by that independence which the farmer alone can enjoy in the fullest significance of the term.

Millions Sent Out for Live Stock

Every farmer should raise his own farm work stock. It is true that millions are sent out of the Cotton Belt each year for mules and horses, but this is not the main reason why your attention is called to this subject at this time. Probably one of the two chief causes of poverty in the Cotton Belt is the one horse plow. The small mule and a turning plow is a guarantee of shallow soil devoid of vegetable matter.

Farmers who buy their work stock never have enough for the most economical production of crops. We have about one-fourth the horse power and earn about one-fourth as much money as farmers in some other sections of the country.

Farmers who buy feed stuff to feed plow teams never raise sufficient farm work stock to supply their needs. We buy feed stuff and this is the main

reason why we have about one-fourth as many horses and mules as farmers in other sections of the country.

We can save the millions of dollars paid out for mules and horses each year and bring in millions from the sale of mules and horses, but a greater profit will come from securing in this way sufficient work stock for economical crop production.

What a One Crop System Means

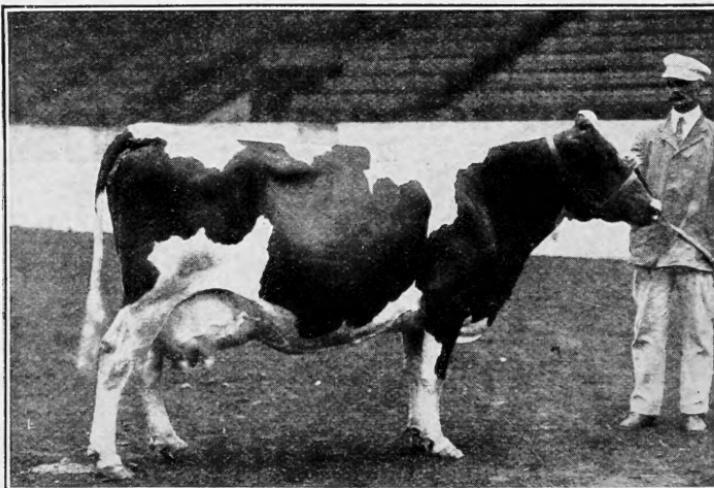
1. Poor soil.
2. Small crops.
3. The credit system.
4. Work unevenly distributed.
5. Injurious insects and plant diseases.
6. Cotton money sent to other sections for farm products.
7. Scarce money and high rates of interest.
8. Poor people, poorly equipped farms, uncomfortable homes, bad roads, poorly paid teachers and preachers.

How Soils Lose Plant Food

1. By washing.
2. By crops removed.
3. By leaching.

How Plant Food Can Be Put Into the Soil

1. By growing and feeding leguminous crops.
2. By barnyard manure.
3. By applying commercial fertilizers.
4. By plowing under green crops.
5. By plowing under corn and cotton stalks, oat and pea stubble, grass and weeds.



The Holstein a good type of dairy cow

How to Diversify Crops

**Safe and Sane System of Farming for the Cotton Belt,
Based on Scientific Experiments and Practical Experiences of Farmers**

I do not wish to be understood as advocating the diversification of crops to the extent of developing a scarcity of raw cotton to meet the demand of the consuming world. Such a course would be fatal to our cotton growing interests in more ways than one. I am anxious to see a sufficiency of raw cotton produced each year to meet all demands of consumption.

The Value of a Proper System of Crop Rotation

Cotton is the greatest cash crop grown. The demand for it is rapidly increasing. The demand of the consuming world has doubled every twenty-two years. If we estimate thirteen million bales as a minimum supply for the world's clothing at the present time, it will require twenty-six million bales in 1932, and fifty-two million bales in 1951 to meet the demands of commerce. I do not advise the farmers of the Cotton Belt to supplant cotton as the main cash crop, but urge all of them to supplement it with thoroughly good permanent pastures, leguminous crops, grazing crops, forage crops, and good live stock. The sensible thing for each farmer to do is to largely reduce his acreage of cotton, practice a system of rotation, including leguminous crops, and raise mules and horses, cattle, hogs, poultry, and other live stock. Plant fewer acres in cotton, fertilize and cultivate better and obtain an increased yield of lint cotton per acre. Under this modern system of farming some of our acres will not be needed for cotton. These can be thoroughly sodded to grasses and clovers, and planted in leguminous crops and corn, oats, rape, sorghum, and cane. Under these advanced methods, the soil will rapidly increase in fertility, the money obtained for cotton will be kept at home, the cotton crop will cease to bear the entire burden of the total expense of each farm, the iniquitous credit system that has for forty years dragged the growers bound and broken will no longer exist, and the growers will each year grow in strength and permanent prosperity.

Keep Away From a Single Crop System

The first efforts at breaking away from cotton usually consist in going largely into another single crop system of farming rather than going into the production of a variety of crops. Many farmers rush into the truck business; others plant their farms largely in Louisiana Cane, peanuts or sweet potatoes. Truck crops should be grown on every farm and in some particular localities they may constitute the main reliance for cash. Fortunes have been made by truck farmers with quick transportation facilities at their doors, but let us not forget that trucking has lured many farmers to financial ruin. The too exclusive culture of cane, peanuts, sweet potatoes or any other crop means poverty sooner or later.

James J. Hill, one of the greatest thinkers of this age says: "Give us a system of farming that will greatly increase the fertility of the soil." He further states: "Forty years ago a farmer had to feed but one other than himself. Today every farmer must produce food for two besides himself."

Henry Wallace recently said: "The nineteenth century farmer, speaking generally, was no farmer at all, but a miner of soil fertility, a soil robber." Mr. Hill speaking along the same line says: "The average American farmer has no equal for carelessness and for adhering to discredited methods of farming. We will soon be unable to feed ourselves or to feed the boasted home markets for the other industries that we are building on a constantly narrowing base."

Soil Fertility Most Important Problem

Of course, we should drain the land, thoroughly prepare the seed bed, plant the best seed, practice frequent and shallow cultivation and make the most careful use of manure and fertilizers, but no problem is of so much importance as the maintenance of the supply of plant food in the soil.



Improved method of loading hay

The first step to be taken in order to add to the supply of plant food, is to reduce washing to a minimum. The addition of vegetable matter, sowing of winter cover crops, deep plowing, and properly constructed terraces will reduce the washing of land to a minimum.

Diversification of crops enables the farmer's family to fare sumptuously every day in the year on farm products, makes it possible for him to utilize three times as much land in such a way that its productiveness rapidly increases, instead of wearing out about fifteen acres at a time, and keeps the cotton money at home, but as Hill says our prime object in adopting a system of farming, should be to increase the fertility of the soil.

The farmer should always strive to grow that crop or crops which extended over a long period will possess the greatest money value. By this I mean that farmers should not be so short-sighted as to sacrifice the fertility of their lands and future wealth for immediate returns.

Proper Rotation for Cotton

It has been found by actual tests on experimental plots that on a definite area, say twenty acres, it is possible to produce as much cotton in ten years by practicing a three year rotation of corn and peas, then oats followed by peas and then cotton as it is possible to produce by planting the entire twenty acres to cotton every year. Carefully conducted tests have also proved conclusively that live stock must be kept on a farm in order to produce the maximum results. These tests show the absolute necessity for growing several crops and keeping live stock.

Before adopting a system of cropping and selecting the crops to grow, we must consider the local conditions, such as climate, labor supply, market demands, and transportation facilities. We can not grow perishable products unless we have quick transportation facilities. Even if a farm crop is not perishable and we have the quickest transportation facilities at our door, we must be careful not to glut the market. These observations being true, we find that we must devote our energies to staple farm crops such as grass, corn, peas, soy beans, cane, poultry, live stock, and some cotton. It is not enough to expose the evils of the one crop system. We must be able to show, on general lines, what system we intend to establish as a substitute, and on general lines how the average cotton farmer can proceed.

One of the following systems or a similar system if adopted and carried out by our cotton farmers, will in ten years, make our soils exceedingly productive, our farmers prosperous and the Cotton Belt, the financial center of the world.

Cotton, first year; corn and peas, soy beans, or velvet beans, second year; oats, followed by lespedeza, soy beans or cowpeas, third year; or cotton and crimson clover sowed in the fall first year; June corn and volunteer crimson clover, second year; oats followed by soy beans, lespedeza, or cowpeas, third year; or cotton and crimson clover first year; June corn and volunteer crimson clover, second year; oats followed by lespedeza, third year; lespedeza, fourth year.

Of course, commercial fertilizers, thoroughly good permanent pastures and plenty of good live stock must be added to the adopted system of farming.



Nothing better than manure to enrich the soil

What Diversified Farming Means

1. Less acres in cotton.
2. The growing of the crops necessary for home use.
3. The growing of crops to enrich the soil.
4. Good permanent pastures.
5. Forage crops, principally leguminous crops.
6. The raising of good live stock to consume the leguminous crops grown to enrich the land and to make manure to still further enrich the land.
7. Feeding crops grown to good live stock.
8. The careful saving of barnyard manure.
9. The distributing of farm work evenly throughout the year.
10. Green crops growing on the land every month in the year.
11. Reducing soil washing and leaching to the minimum.
12. Raising of the draft horses and mules necessary for economical crop production.

Suggestive Rotation of Crops, Three Year Rotation

	Field "A"	Field "B"	Field "C"	:
1914	Cotton and a Winter Cover Crop	Corn and Cowpeas	Small Grain and a legume	:
1915	Corn and Cowpeas	Small Grain and a legume	Cotton and a Winter Cover Crop	:
1916	Small Grain and a legume	Cotton and a Winter Cover Crop	Corn and Cowpeas	:

} Cotton }

Cost of Growing:

Land Rent	\$4.00
Preparation	2.33
Fertilizer	4.00
Seed25
Planting66
Cultivating	2.80
Picking (at 60¢ per 100)	9.00
Ginning and hauling	5.00
 Total	\$28.04
Loss in fertility	23.70
 Income:	

500 pounds lint cotton at 10¢	\$50.00
1000 pounds cotton seed at ¾¢	7.50

Total	\$57.50
-----------------	---------

Comparative Value

of

Fertility In Farm Produce

Nitrogen 20c, Phosphoric Acid and Potash 5c

Cotton in Seed.....	\$31.60 per ton
Vetch Hay.....	15.50 "
Shelled Corn.....	12.25 "
Clover Hays.....	11.90 "
Wheat (grain).....	10.00 "
Fat Cattle.....	9.30 "
Oats (grain).....	8.43 "
Soy Bean Hay.....	8.33 "
Cowpea Hay.....	8.30 "
Fat Hogs.....	6.24 "
Milk.....	2.02 "
Lint Cotton.....	1.80 "
Butter.....	.72 "



These fit well into diversified farming

Value of Leguminous Crops

Fertilizing Value of Leguminous Crops—Add Free Nitrogen to the Soil and Increase the Yield of the Crops That Follow

Leguminous crops have a very important place in every safe and sane system of farming. These crops possess a characteristic which makes them of the highest value to farmers. This is the power to utilize the free nitrogen of the soil air. When we examine the roots of luxuriantly growing plants, we find numerous nodules or tubercles on them. These tubercles are caused by certain organisms or bacteria in the soil. It now seems that there is a special form of bacteria for each legume grown, though some forms of bacteria in time learn to live on two or more legumes.

Methods of Soil Inoculation

It is a matter of great importance to furnish the soil lacking the necessary organisms with a good supply of the right kind. There are several methods



Cowpeas in the corn field indicates good farming

of putting the necessary bacteria in the soil. A good way of inoculating the soil is to soak the seed at planting time in water in which the soil from a field where the legume has been successfully grown for a number of years has been stirred. Another excellent way of inoculating the soil is to drill in with the seed soil in which that particular legume has been grown for a number of years. Care should be taken to keep the soil out of the sunshine from the time it is taken from the field until it is worked into the soil of the next, as the rays of the sun kill the bacteria. It is best to get the soil and apply it on a cloudy day, or late in the afternoon.

Nitrogen is the costliest element of plant food and is becoming scarcer and dearer so far as its commercial forms are concerned. This being true, a system of farming which provides means for the collection of this valuable and costly element from the air and a medium through which it can be stored up for the use of succeeding crops is of the highest importance and utility to farmers. Experiments conducted at the Alabama Station showed that a crop of pea vines grown on an acre of sandy soil of moderate fertility contained 115 pounds of nitrogen; an acre of velvet beans, 201 pounds; an acre of crimson clover 143 pounds; and an acre of hairy vetch 202 pounds. An experiment conducted at Louisiana Station showed that a crop of peanuts contained 192 pounds of nitrogen; an acre of velvet beans, 191 pounds, and an acre of cowpeas, 108 pounds. When calculated according to the scale of fertilizer valuation, the value of nitrogen exceeded the cost of a ton of ordinary complete fertilizer. The nitrogen was equivalent in amount to that contained in from 1,750 pounds to more than one ton of cotton seed meal.

The question is often asked if it is necessary to plow under the leguminous crops in order to increase the nitrogen in the soil. Of course, the per cent of fertilizer value of the fallen leaves, stems, and roots of the leguminous crops left in the field at harvesting time vary. However, the fallen leaves, stems, and roots usually contain from one-fifth to one-third of the manurial value of the entire plants of the leguminous crops. This being true, we are in a position to assert positively that the nitrogen in the soil will be increased by the growing of leguminous crops, even though the crop is grazed off or cut for hay.

Live Stock Farmers Should Feed Crop

The live stock farmer should seldom plow under a leguminous crop. The stock should graze off the crop or it should be harvested and fed to the stock, and the manure saved and returned to the land. It will often pay the all-cotton, the all-cane, the all-truck farmer to plow under pea vines, soy bean vines, and other leguminous crops, but the live stock farmer does not need to plow under such valuable grazing and hay crops.

In an experiment conducted at the Alabama Station a crop of pea vines grown on one acre, contained 45 pounds of phosphoric acid and 101 pounds of potash. The legumes add only nitrogen to the soil and remove large quantities of potash and phosphorus, especially when cut for hay and the hay sold or the manure resulting therefrom is not returned to the land. It should be emphasized that the mere growing of legumes or the introduction

of legumes into the farm rotation will not increase indefinitely the productivity of the soil. Liberal applications of phosphoric acid and potash must be made where the soil does not contain an abundance of these elements.

The farmer who grows leguminous crops and keeps good live stock wants to know whether to use the treated or untreated phosphate rock to increase the yield of his legumes and improve his soil. The conclusions drawn from a careful study of the results obtained at several experiment stations are that on a very poor soil, acid phosphate will pay better for a few years at any rate, even if the leguminous crops are turned under, but that on a very fertile soil raw phosphate rock will pay better, especially when used with stable manure or leguminous crops. In most cases it would seem to be advisable to use a light application of acid phosphate with the untreated phosphate rock the first year and some time for several years, until the latter gets into action.

Legumes used as winter cover crops not only transfer nitrogen from the air to the soil, but at the same time reduce the leaching out of the plant food already present in the soil to the minimum. More humus and nitrogen in the soil and more winter and early spring grazing are probably the greatest needs of the south. These needs can be fully satisfied by planting such crops as the vetches or the winter clovers. In discussing the subject of legumes as a winter cover crop, Dr. Tait Butler says: "For many years to come the plowing under of crops grown as winter cover crops will be the most practical and profitable method of increasing the fertility of our soils and rapid increase is not likely to occur until this method becomes general as a frequent and constant practice."

Leguminous Crop Rich in Protein

The leguminous crops are especially rich in protein, which furnishes material for the production of lean meat, muscles, nerves, skin, blood, tendon, wool, hair, casein in milk, albumin of eggs, and so forth. This makes the legumes especially valuable for feeding farm animals in connection with fat producing foods, such as corn and sorghum.



Horse power is cheaper than human labor

The German standard rations were computed from digestion experiments without reference to the comparative cost or convenience of obtaining the various feeding stuffs. There is a growing tendency to break away from the idea which has long prevailed that successful feeding must conform to the German feeding standards. Professor W. A. Henry says: "The feeder should not accept the statement in the standard as absolute, but rather as data of a helpful nature to be varied in practice as circumstances suggest."

Leguminous crops must be grown in the Cotton Belt to economically enrich our cultivated lands and there is every reason why we should feed our live stock largely on legumes. The fat in the corn and other fat producing foods cannot be used by animals for building up muscles, blood and other tissues of the body, but the protein in the leguminous crops may under certain conditions form fat and later furnish heat and energy. This at least justifies the farmer, who grows leguminous crops to enrich his soil, in feeding narrow rations. Owing to the fact that we can grow leguminous crops every month in the year for grazing, for hay and for grain, Cotton Belt farmers should feed stock largely on legumes, although the rations may often be narrow. Legumes mean rich land and fat stock.

Why We Should Grow Leguminous Crops

1. To transfer nitrogen from the air to the soil.
2. To furnish foodstuffs rich in protein.
3. To pump phosphoric acid and potash up from the subsoil.
4. To open up the subsoil.
5. To add humus to the soil.

Soy Beans

COST OF GROWING

Land rent.....	\$ 4.00
Seed.....	.75
Plowing.....	2.00
Fertilizer.....	1.00
Discing.....	.33
Dragging.....	.48
Planting (horse planter).....	.22
Cultivating.....	1.61
Cutting (mowing machine).....	.60
Raking and shocking.....	1.50
Threshing at 6c per bushel.....	1.20
 Total.....	\$13.69
Loss in fertility.....	00.00
 Total.....	\$13.69

INCOME

19.5 bushels soy beans at \$2.00.....	\$39.00
1.76 tons soy bean straw at \$3.00.....	5.28
Total.....	\$44.28

The value of the nitrogen put in the soil by the growing of soy beans is probably worth more than the phosphoric acid and potash removed.

Cowpeas

COST OF GROWING

Land rent.....	\$ 4.00
Plowing.....	2.00
Discing.....	.33
Fertilizer.....	1.00
Seed Value.....	.75
Dragging.....	.48
Planting (horse planter).....	.22
Cultivating.....	1.61
Cutting (mowing machine).....	.60
Raking and shocking.....	1.50
Hauling to thresher.....	1.60
Threshing at 9c.....	1.12
Total.....	\$15.21
Loss in fertility.....	00.00
Total cost to farmer.....	\$15.21

INCOME

12.5 bushels cowpeas at \$2.00.....	\$25.00
1.15 tons cowpea straw at \$3.00.....	3.45
Total.....	\$28.45

One acre of soy beans yielded 20 bushels of soy beans and 2,905 pounds of straw.

Feeding Beef Cattle

One acre of cowpeas yielded 13 bushels of cowpeas and 1,365 pounds of straw.

One acre of corn yielded 34 bushels of corn and 3,544 pounds of stover.

The acre of soy beans produced 540 pounds beef.

The acre of cowpeas produced 327 pounds beef.

The acre of corn produced 203 pounds beef.

Tenn. Bul. 79.

Lespedeza or Japan Clover

Lespedeza Adaptable to the Cotton Belt—Makes Good Pasture—Fits in a Three Year Rotation of Corn and Peas—Is Commended to Boll Weevil Territory

The Cotton Belt is face to face with a very grave crisis, and how to meet this crisis is the question of paramount importance to cotton farmers and especially to cotton growers in the lower South. Enormous sums of money annually flow into the Cotton Belt in payment for cotton and cottonseed products. Already the income from this source in South Louisiana, South Alabama and South Mississippi, has been cut to one-half. The production of cotton in many other localities has been very much lessened. The weevil will soon cover the Cotton Belt.

Only one rational method of meeting this loss presents itself and that method is the diversification of crops. We must raise our own hogs, horses, mules, cattle and poultry. We must have good pastures and good hays. The best pastures in the South are perhaps those which in summer consist of Bermuda grass and lespedeza. Lespedeza hay is not inferior to the best kinds of hay.

It is generally believed that lespedeza was introduced into many localities during the Civil War for the reason that it first appeared soon after the war. It grows freely along the roadsides, on the banks of gullies, and on hillsides and the seed are carried in mud on vehicles and in streams of water all over the country. Live stock eat the hay and many of the seed pass through the animal with unimpaired germinating power.

Lespedeza Grows Wild in South

Lespedeza is now growing wild over all the South except in Western Texas. It is a grazing plant in all of this territory, but it is now considered a profitable hay crop only in Louisiana, Mississippi, Alabama and in certain localities in other states in the lower South. Within a few years it will probably be a profitable hay crop wherever cotton grows.

Lespedeza is an annual legume that comes from seed late in the spring and is killed by frost in the fall. The stems are very slender, branch at every joint and grow to a height of six to twenty-four inches.

When the plants are very thick, many of the side branches are shedded off and they begin to bloom later than where they have plenty of space. No authority on the subject gives the time required for the seed to mature. The length of time from bloom to mature seed decreases as the season progresses.

The lespedeza seed is a one-seeded pod. The seed are never threshed from the pods because it is a very difficult and unnecessary task. Well cleaned seed weighs twenty-five pounds per bushel.

Lespedeza thrives on a variety of soils, but it prefers a well drained, moist, fertile soil. Sandy soils in uplands seldom supply the necessary moisture to grow a profitable crop of hay.

Where the soil responds to acid phosphate it usually pays to make an application of about 600 pounds of sixteen per cent acid phosphate per acre at the time of planting oats or about 500 pounds per acre when the lespedeza seed are sown. Where the lespedeza is grown in a permanent pasture, ground phosphate rock will usually pay on land that responds to applications of acid phosphate.

Adds Nitrogen and Humus to Soil

Lespedeza is a legume and gets nitrogen from the air. It increases the nitrogen and humus in the soil rapidly. The soil in every locality seems to be inoculated and for this reason artificial inoculation is unnecessary.

Experiment seed men who have made germination tests of seed carried over report good results. Some growers claim that seed placed under too deep will come up three years later when brought to the surface.

Bloat in animals from grazing lespedeza is unknown even when pure lespedeza is grazed. Horses often slobber to some extent when grazing lespedeza or eating lespedeza hay, but seldom to such an extent as to be objectionable.

Lespedeza is a constituent of practically every pasture in the region covered by its distribution. It is looked upon with high favor as a constituent of pastures. It grows on all types of soil even the poorest and furnishes good grazing. It is estimated that it will increase the carrying capacity of the pasture land in the Cotton Belt 25 per cent.

It is rarely necessary to sow lespedeza seed on pasture land. When necessary to do so it is only necessary to scarify the surface of the ground with a disk harrow and sow the seed. It occasionally happens that the lespedeza seed sprout during exceptionally warm weather in the late winter and are killed by late frosts. Such pastures should be reseeded early in the spring.

Our lighter fertile, moist soils are probably best adapted to its growth for hay. There is not such a tendency to the excessive growth of large grasses and weeds on such soils as there is on heavy black clay soils and on very wet river bottom lands.



Lespedeza a great hay crop for the South

Sow After a Cultivated Crop

It is advisable to sow lespedeza seed after cultivated crops. The presence of weeds and undesirable grasses in lespedeza hay is a serious evil and can best be prevented by adopting a rotation of crops in which from one-half to three-fifths of the land is in lespedeza. The following four year rotation is suggested: First year, cotton; second year, corn; third year, oats followed by lespedeza; fourth year, lespedeza. This puts half the farm in cultivated crops and half in lespedeza with oats on one-fourth of the whole farm.

A three year rotation of corn and peas, oats followed by lespedeza and then lespedeza has much to commend it for the boll weevil territory. Corn and peas are harvested the first year, oats and lespedeza the second year, lespedeza alone the third year. The cotton is omitted in this rotation because the boll weevil often does so much damage in the lower South that the farmers are willing to drop cotton and plant something else.

Probably the best plan for a few years is to plant the land in oats in the fall and sow lespedeza seed on the oats in March. Flat break the land with large plows and strong teams in October. Disk and double disk and harrow and cross harrow until the soil is thoroughly pulverized. After the land is in thorough tilth, pass a drag over it to get it smooth and level. Follow the drag by a good grain drill, planting from two to three bushels of rust-proof oats per acre.

Soon after March first run a peg-tooth section steel harrow over the oats to prevent heavy rains from drifting the seed and plant one bushel of good, sound, well cleaned lespedeza seed per acre. Be sure and plant seed that are well matured, well cleaned and were taken from the lespedeza hay without its being heated. And let us not forget that some of the seed put upon the market is not fit to plant.

The cutting and curing of the best hay begins about September first and extends to October 15th or in very favorable seasons until frost. If the best quality of hay is wanted cut when in bloom. If we care to save seed, it will of course be necessary to wait until some of the seed is mature. Start the mower when the dew is off in the morning.

Methods of Harvesting and Storing Crops

The principal thing in curing hay is to avoid dew, sunburn and rain. After sunning about two hours windrow the hay, then cross the windrow and rake it up into piles. Then shock the piles of about three hundred pounds and cap each one before night to keep off the dew. Cover it with caps ten feet square made out of eight-ounce duck or lowells which cost about eight cents per yard. Leave it covered in the cocks for from seven to ten days to go through a sweat. After that is done bale it as fast as you can.

Many of the most successful lespedeza hay growers say that the barn is absolutely necessary to the most successful curing of lespedeza hay. When curing the grade of choice hay, that is hay containing very little foreign substance and cut at the proper time it is kept in the covered cocks about two days, scattered for only a few minutes and then hauled to the barn and kept there for about four weeks before baling it.

Where it is desirable to have the crop reseed itself, some of the seeds must be allowed to mature. The reseeding of land is usually accomplished by the seed on spreading branches which are too near the ground to be mowed. However, tall and crowded plants do not produce seed near the ground and when cut just before some of the seed mature seldom reseed the land.

There are several methods of reseeding the land. You may leave six inch strips of uncut lespedeza at each round of the mower; the crop may be cut after some of the seeds have matured so that enough will shatter while harvesting the crop to reseed the land; or the crop may be cut when the first blossoms appear so as to give new growth from the stubble time to mature seed before frost.

Profitable to Grow for Seed

The lespedeza seed are very valuable. The average of seed obtained per acre is about eight bushels but as high as fifteen bushels per acre is often obtained. The price varies from three dollars to five dollars per bushel. The present demand for the seed is much greater than the supply.

There are several ways of saving lespedeza seed. Certain meadows may be set aside and not cut until after November first. The hay is run through a thresher which is arranged for the purpose by removing some of the teeth from the concave plate over which the cylinder revolves and placing seed sieves in the machine. By driving the cylinder slowly the seed is beaten out and not carried away by the fan but is very nicely cleaned. Another method is to attach a large pan to the blade frame of the mower and catch seed as shattered in the mowing. The hay may then be threshed in order to get the mature seed that did not shatter. It is a good plan to use the pan to catch the shattered seed and then thresh the hay before baling. The seed caught by the pan should be passed through a good fanning mill.

Many farmers use the pan to catch the shattered seed, use tight wagon frames or else spread sheets over the bottom so as to catch the loose seed, have the tables slotted on which the hay is thrown to the man who feeds the thresher or hay press so that the seed can fall on a sheet on the ground and also use a press perforated in the bottom of the chest so that the seed from unthreshed hay may fall to the ground.



The soy bean supplies a wealth of forage

Pastures a Necessity to Live Stock Farmer

Farmers of the Cotton Belt Should Devote More Attention to Permanent Pastures—Some of the Grasses Best Adapted to Cotton Belt

If the Cotton Belt is to raise hogs, mules, horses, cattle, sheep, and other live stock successfully, under present land and labor conditions, it must resort to pastures and cheap hays. If it is to produce the necessary quantity and quality of all kinds of live stock it must devote more and better land to pastures and meadows.

Many farmers in the South prize wheat, corn, oats, cotton, rice, and cane as crops because their growth has become a habit. Very few farmers have compared the profit derived from an acre of cotton and an acre of Bermuda Grass, lespedeza and some winter clover. On many farms the growing of cotton represents a loss instead of a profit. On many farms in the South the growing of leguminous crops for two or three years until the worn out cotton lands will grow good grass and the sodding of the land in Bermuda grass and the growing of pure bred hogs, sheep, cattle, and goats, horses, and mules will result in big profits instead of the loss sustained by the growing of cotton on the same land year after year. Senator Ingalls said, "Next in importance to the divine profusion of water, light and air—those three physical facts which render existence possible—may be reckoned the universal beneficence of grass." Ingalls told the whole truth, but few farmers in the South believe what he said. Not one farmer in a thousand fully appreciates the full value of a good permanent pasture. The most prosperous counties in England owe their prosperous agriculture to the magnificent pastures. The blue grass region of Kentucky has done much to cause our farmers to appreciate grass to some extent. There are sections of Tennessee and Virginia where the successful growing of fine stock has helped Kentucky to gain friends for grass.

Permanent Pastures Recommended for South

We firmly believe that we are telling the truth when we say that the main cause of the lack of prosperity on southern farms is the absence of good permanent pastures. We have turned out a worn gullied cotton field stretched two or three barbed wires around it and called it our pasture. Not a furrow was turned, not a seed was sown. No wonder that our pastures are often referred to as "a place where grass does not grow."

A good pasture is made by thoroughly preparing very fertile soil and seeding it to the right kind of mixed grasses, so that every square foot of it is well covered with nutritious grasses and clovers instead of broom sedge, briars and weeds. The large majority of us have never had a good permanent pasture and therefore base our conclusions on the value of a permanent pasture on our experience with a pasture where grass does not grow. We have never yet valued a thoroughly good permanent pasture high enough.

There are, of course, pastures without grass such as, pastures of cowpeas, soy beans, peanuts, velvet beans, oats and so forth, but these are temporary pastures and last for only a short time. Of course, we must have such temporary pastures in order to succeed in the live stock business, but the subject before us just at present is a good permanent pasture full of nutritious grasses and clovers. We are talking about taking land and thoroughly preparing it and fertilizing it with acid phosphate and planting it in cowpeas, soy beans, lespedeza, peanuts or some other good leguminous crop for one or two years and then sodding it in Bermuda grass, burr clover, and white clover and lespedeza for pure bred hogs, cattle, horses, mules, sheep and other live stock to graze.

Bermuda Grass Best Pasture

The best pasture grass for the South is Bermuda. We are growing corn and cotton on poor soil and feeding a few scrub stock to obtain the necessary cash to pay expenses. We are not able to say just what is the average cost of production of an acre of corn or cotton, but the cost of an acre of Bermuda grass on fertile soil is a fence and a gate to turn the stock in. The stock will harvest the grass and usually bring a large per cent of clear profits.

Bermuda grass is the great pasture grass of the sub-tropical and warmer temperate regions throughout the world. It is widely distributed throughout the Cotton Belt and holds the place in those states that Kentucky blue grass holds in the North. It is a warm weather grass; it will not grow in cold weather and usually winter kills when the temperature falls much below the zero point.

It is primarily a pasture grass and is relished by all kinds of stock. It will stand close grazing and much tramping. It also makes hay of excellent quality, but it will not grow tall enough to mow, except on very fertile soil. On fertile soil under favorable conditions, it often furnishes two or three cuttings, yielding in a season from two to four tons of hay per acre.

Since it furnishes no late fall or early spring pasture, summer and winter clovers and vetches must be added to the sod or other grasses or annual pasture crops must be grown in order to supply continuous grazing for stock. We can mix lespedeza, white or burr clovers, and the vetches with Bermuda and they will grow well together. We can also mix orchard grass, tall oat grass, and red top, with Bermuda. By putting lespedeza on the Bermuda to assist in furnishing summer pasture and winter clovers or a vetch on it to furnish some winter and early spring grazing, we can supply continuous grazing for our stock and at the same time enrich our land.

Sow lespedeza seed on Bermuda sod in February or early March; sow the winter clovers or vetch seed in September and October. When the seed is sown on a heavy sod, it is usually necessary to disk it in order to insure germination of the seed at an early date.

Preparing the Soil for Bermuda

Bermuda may be propagated both from seed and root cuttings. The seed method is not recommended except where it is very difficult to secure pieces of sod. Plow the land deep and disk and harrow until it is fine.

Lay off rows about two feet apart and four inches deep with shovel plows. Drop small pieces of the sod every two feet in the furrows and cover with a harrow. A drag or light roller will put the finishing touches on the job. The sodding of the land may be done at any time during the year.

When we have made our hill land fertile by deep plowing, the addition of commercial fertilizers and the growing of leguminous crops, and have thoroughly sodded it in Bermuda grass and summer and winter clovers, we can cut out some of our unprofitable labor, substituting good hogs, brood mares and cattle and furnish the best tenants labor saving implements and strong teams to till the more level acres on the farm.

The pasture lands should not only be fertile, thoroughly prepared and properly fertilized before sodding it in grass, but the briars, brush and weeds must be kept down and the grasses fertilized and cultivated every two or three years. Where lespedeza or some winter clover or both grow on Bermuda sod, it will not be necessary to apply nitrogen except to the poorer spots. It will usually pay to apply a light dressing of phosphate once every two years where the soil responds to phosphoric acid. On some sandy soil, it will pay to apply potash every two years. The use of a disk harrow on the Bermuda sod every two years will cause it to take on new life.

We must not permit stock to graze the pastures too close. If we keep the leaves of any plant constantly cut, it will finally die. It is a most excellent plan to have two pastures and never graze one more than two weeks at a time.

Let us urge the farmers of the Cotton Belt, especially those to the east of the boll weevil line, to put a large per cent of the cotton land in grass. We have a great variety of grasses to choose from, such as Bermuda, blue grass, meadow foxtail, orchard grass, red top, meadow fescu, alsike clover and tall oat grass.

We Must Have Permanent Pastures

Why?

1. To cheapen animal production.
2. To maintain farm fertility.

How?

1. Drain wet places.
2. Increase fertility of soil.
 - a. Thorough breaking.
 - b. Grow summer and winter legumes.
 - c. Add acid phosphate, some nitrogen and some potash where needed.
3. Sod in Bermuda grass.
4. Sow lespedeza on Bermuda sod.
5. Sow a mixture of vetch, crimson and burr clover on Bermuda sod.
6. Use barnyard manure on poorest spots.

7. Keep down bushes, briars and weeds.
8. Cultivate every two or three years.
9. Do not pasture too closely.

Care of Pasture

Don't fail to cultivate.

Don't fail to fertilize.

Don't fail to cut weeds.

Don't graze too early.

Don't graze too close.



Soy beans yield abundant crops and add nitrogen to the soil



Pigs idea of Heaven

Advantages of Growing Oats

Oats the Most Profitable Small Grain Crop for the Cotton Belt—Planting, Harvesting and Care of the Crop

The chief crops grown in the Cotton Belt are cotton and corn. As an average for a ten-year period of 1900 to 1909, there was planted from ten to fifteen acres of corn to each acre of oats in the various Cotton Belt states. During the same time an average of the oat crop per acre was \$10.09, while the average value per acre of corn was \$11.02. Figuring the cost of growing an oat crop and a corn crop, we find that the oat crop was the most profitable. There are several important reasons why we should sow millions of acres of oats in the Cotton Belt. The oat crop would reduce washing and leaching to the minimum, furnish grazing, add to the deplorably deficient supply of humus, add to the always short supply of food stuffs and supplement the money crop—cotton.

Of course, there are better winter cover crops than oats. Burr clover and crimson clover and the vetches, and in some cases some of the other winter cereals are better. We do not claim that oats alone or that oats and hairy vetch combined should be grown for the sole purpose of supplying a cover crop. However, in view of the fact that oats will grow on poor land, poorly prepared and it costs little to seed an acre, it is a good winter cover crop for the many thousands of farmers who have not learned to grow winter legumes.

Results of Feeding Experiment With Oats

Two and one-half acres were planted in oats at the experiment station at Baton Rouge, La., for a grazing experiment on September 28th. October 29th, seven Poland China Hogs, weighing in total 276 pounds, were put on this plat and were given no feed but the green oats during the winter. February 17th, the pigs weighed a total of 568 pounds. There was an average gain of .37 pounds per pig per day for 110 days. From October 29th to January 1st, 45 head of sheep were pastured on this same plat. Of this number, eight ewes and nine lambs were pastured continuously thereafter until February 17th, at which date the lambs averaged 68 days old and weighed 35.5 pounds each. Allowing six cents per pound for the lambs, we have a return of \$13.40 per acre, plus the pasture of the sheep not considered in the estimate.

The loss of humus in the soil results in the decreasing of its power of storing up and properly supplying crops with water. Soils with a liberal supply of humus are capable of more effectually withstanding drought than similar soils with less humus. The oat crop fills the soil full of roots, and the stubble also adds much humus to the soil.

The oat grain is very valuable feed, especially for young animals because of its moderately high protein content and the large amount of ash and mineral matter. Pound for pound, oats are not as valuable for feeding ma-

ture animals as corn, four pounds of corn being equal to about five pounds of oats. However, when we consider the cost of growing the two crops and the fact that feed is always scarce when the oat crop is harvested, we are forced to admit that every farmer in the Cotton Belt should grow oats.

In attempting to build up the worn out cotton lands, we must depend very largely on the leguminous crops. The oat crop is harvested early enough to permit the growing of a leguminous crop. The leguminous crop may be plowed under or it may be used as feed, and the manure returned to the land. If we are going to build up our land and raise good stock, we must grow oats, follow with legume crops, and feed stock.

Oats Best Paying Small Grain

Oats are probably the best paying small grain crop that can be grown over practically the entire Cotton Belt. The same soil that will produce one bale of cotton or 40 bushels of corn per acre will produce 60 bushels of



Oats a paying grain crop

oats. At the average price that has prevailed for oats during the last five years, the 60 bushels will sell for from \$36.00 to \$40.00 and the straw when baled will often pay for growing the grain.

It is best to plant oats after corn and peas. Cut the corn stalks and pea vines into pieces with a disk harrow. The disk harrow is the best possible implement to use in preparing the corn and pea fields for oats. The drill will clog in trashy ground and particularly when working in uncut stalks and pea vines. When the disk harrow is used before the land is broken, the drill runs freely and easily, thus depositing the seed evenly. After using the disk harrow to cut the corn stalks, plow the land deep, then disk and double disk and harrow and cross harrow until every inch of the soil has been stirred and broken as fine as possible. After a good rain or the use of a roller, the land is ready for the seed.

A mixture of 300 pounds of 16 per cent acid phosphate, 100 pounds of cotton seed meal, and 200 lbs. of potash, followed in March with a top dress-

ing of 50 to 75 pounds of nitrate of soda per acre is good fertilizer for oats on average soil.

The best varieties for fall sowing in the South are of the Red Rust proof type. The original Red Rust proof, the Appler and Bancroft are so nearly alike that no one can tell them apart if shown side by side. The Burt oat is for spring sowing.

The quantity of seed that is necessary to sow an acre of oats is variable. If sown early in the season or if sown on very fertile soil, a smaller quantity of seed may be used than if sown late or sown on poor land. If the crop is drilled, 25 per cent less seed may be used than if the same crop were to be sown broadcast. Experiments show that two and a half bushels per acre is about right under average conditions.

There are three methods commonly practiced of planting oats; namely, sowing broadcast, open furrow and drilling. Drilling of the seed is to be preferred since considerably less seed can be used if drilled; the seed are covered at a uniform depth and come up, grow, and ripen uniformly; the small ridges made by the drill afford a slight degree of protection from the cold; and the yield from drilled oats is usually greater than that from broadcast oats. The seed saved, and the larger crops that usually result from drilled oats will soon pay for a good drill on the farm.

Harvest the Oat Crop Early

We should harvest the oat crop early. Cutting should begin as soon as about 90 per cent has turned yellow—just as soon as all the grain is in the dough stage—if we do not own a good mowing machine, or better still, a good binder, now is the time to buy one. The cradle is too slow and the waste when using a cradle is enormous.

A mowing machine or binder will often do the work for several farmers in a neighborhood. One farmer will often find it profitable to own a mower or binder and to work for his neighbors at a reasonable price.

The oats should be threshed as soon as possible, but should not be threshed when grain is wet from either rain or dew. Store the oats in bulk not over three feet deep. Examine the grain daily for at least three weeks and turn with shovel, if there are any indications of heating.

It is well nigh impossible to discuss oats in the Cotton Belt without discussing lespedeza, cowpeas, soy beans, and peanuts, as those crops are almost as much a counterpart of oats as the Siamese twin Ang was of his brother Chang.

Lespedeza With Oats

As soon as all danger of frost is past, sow about one bushel of lespedeza right on top of the growing oats, and follow with section harrow set slanting. It is advisable to divide the bushel into two halves and sow them broadcast; first sow half over the land walking east and west and the other half walking north and south.

The oats will be ready to cut in May and June. At this time the lespedeza plants will be so small as to be hardly perceptible, though you can see whether

you have a stand or not. Up to that time, the oats have been taking the strength and water from the soil, but the first summer rain makes a difference. The weeds come with a rush and threaten to choke out the lespedeza plants. At this time it is necessary to set the mower blade so high as not to touch the lespedeza, and top the weeds once or twice.

The lespedeza begins to bloom in September and October, and is ready to harvest. It is best to cut when in bloom and all green. Do not cut when wet from dew or rain. Mow in forenoon, windrow and cock in five or six feet high, 200 to 300 pounds to the cock and cover with lowells or eight-ounce duck covers about nine feet square. After about three days open, air as needed and haul to barn or stack.

The packed, crusted soil should not be exposed to the sun's rays a single day after oats are cut. If lespedeza has not been sown we should use a disk harrow and make the surface for two or three inches as fine as possible, for a cowpea, soy-bean or peanut crop. By the use of the disk harrow, we can thoroughly prepare several acres of stubble land every day for these crops. At this season of the year, we are usually very busy and are often unable to spare the necessary time to prepare the land with a plow.

The development of diversified agriculture and the increasing of the acreage devoted to oats and leguminous crops, will do much to hasten the day of independence on Cotton Belt farms.

With the golden grain and legumes glistening in the sunshine ready for the mower, reaper or binder, and the harvest made abundant through the garnering of plenty, there will be peace and prosperity even in the boll weevil districts of the lower south.

Income From Oats

19 Farms

COST OF GROWING

Rent.....	\$ 4.60
Preparing land.....	1.62
Fertilizer.....	5.58
Seed and Seeding.....	1.85
Harvesting.....	1.83
Threshing.....	3.23
Total.....	\$18.11

INCOME

53.44 bu. at 50e.....	\$26.72
2 tons straw.....	5.00
Total.....	\$31.72
Net profit per acre.....	13.61
The highest yield, 74 bushels per acre.	
The lowest yield, 23 bushels per acre.	
The highest cost, 43 cents per bushel.	
The lowest cost, 20 cents per bushel.	

Why We Should Grow Winter Oats

1. More profitable than corn.
2. To reduce winter washing and leaching to the minimum.
3. To furnish winter grazing.
4. To add to the always short supply of foodstuffs.
5. To add humus to the soil.
6. To supplement the cash crop—cotton.
7. To encourage the growing of leguminous crops.

Suggestions for Growing Oats

1. Soil rich in plant food.
2. A well prepared seed bed.
3. Fertilize liberally.
4. Fall planting.
5. The best varieties are of the Red Rust Proof type.
6. Drilling of seed is preferred.
 - A. Less seed is necessary.
 - B. Seed is covered at a uniform depth.
 - C. The small ridges afford protection.
 - D. The yield is greater.
7. Begin cutting when 90 per cent has turned yellow.
8. Thresh as soon as possible.
9. Store in bulk not over three feet deep.
10. Sow lespedeza in March or plant a leguminous crop after oats.

Value of Crops Grown After Oats

Cowpea hay at \$10.00 per ton	\$21.58
Cowpeas at \$2 per bushel	32.00
Spanish peanut hay at \$10 per ton	12.70
Spanish peanuts at 50c per bushel	23.00
Soja bean hay at \$10 per ton	14.00
Soja beans at \$2 per bushel	18.00
Kaffir corn fodder at \$5 per ton	18.64
Kaffir corn seed at 50c per bushel	6.62
Irish potatoes at 50c per bushel	21.00
Sweet potatoes at 50c per bushel	54.00

Oats sold for \$14.55 per acre.

Arkansas Bulletin No. 66.

Different Quantities of Seed Oats Per Acre

	YIELD
*	1 bushel per acre
	1½ bushels per acre
	2 bushels per acre
	2½ bushels per acre
	3 bushels per acre
▲	2 bushels per acre
	2½ bushels per acre
	3 bushels per acre

*Arkansas Bul. No. 66.

▲Missouri Bul. Cir. No. 46.

Corn Growing

The South Peculiarly Adapted to the Growing of Corn— Selection of Seed, Cultivation and Care of Crop

Corn will occupy a very prominent place in the new system of farming. Mixed farming will soon take the place of the one-crop system and combinations of grasses, leguminous crops, corn and pure bred live stock will result in prosperity for our people.

The long seasons of the South make it peculiarly adapted to the cultivation of corn since there is never any risks from early frost catching corn as there is in a large part of what is now termed the corn belt. The rain fall is sufficient to produce maximum crops and it is only necessary to pulverize the soil and fill it full of vegetable matter and plant food, for from five to fifteen inches deep so that it will absorb the rain and then conserve the soil water by frequent and shallow cultivation.

Fertile soil and good seed are essential to success in corn growing, but without thorough preparation of the soil before the seed is planted, we have no right to expect a good crop of corn. If we will only give our lands the preparation that the farmers in the central west give their lands, we can, by reason of climatic conditions and natural fitness for the crop, easily beat them in production, and the doing of this is not a question of mere application of so much fertilizer per acre.

The quantity of fertilizer that can be profitably used depends mainly upon the fertility of the soil. If the soil is deep and full of humus, an application of four or five hundred pounds per acre will usually pay. If the soil is shallow and devoid of vegetable matter or humus, it is seldom advisable to apply more than two hundred pounds per acre. A mixture of equal parts of cottonseed meal and acid phosphate is a good fertilizer for corn on soil of average fertility.

Barnyard Manure for Corn

Barnyard manure is a valuable fertilizer. It increases the amount of available fertility in the soil, adds humus to the soil and improves the mechanical condition. Make liberal applications.

The average yield of corn in the South is about 15 bushels. It is an easy crop to improve in yield and in quality. The yield to an acre can easily be doubled with very little increase in labor or expense by planting better seed, by increasing the fertility of the soil and by practicing better methods of preparation and cultivation.

There is no crop grown that is so much influenced by being transferred from north or south of the section where the corn is to be grown. Therefore, we should avoid sending North or South of our latitude for seed, but should take at the start the best corn attainable that has been long grown in our locality and through careful selection, year after year bred up.

Professor C. P. Hartley of the U. S. Department of Agriculture, made five tests in each of twenty-eight states and home-grown seed gave much higher yields than corn brought from a distance. Professor P. G. Holden,

the authority of this country on corn, made a careful test in Iowa. The average yield produced by seed from other counties was twelve bushels less per acre and the yield produced by seed from seed houses was twenty-two bushels an acre less than that produced by the local seed selected by careful farmers.

Importance of Good Seed

The average corn-grower plows, plants and cultivates one-eighth to one-fifth of his corn acreage without receiving anything for his labor. This is because of the vacant hills and barren stalks attributable to poorly selected seed. We cannot pay too much attention to the selection of the best ears of corn in the field in the fall. In an experiment one ear gave 79 barren stalks, or 21 per cent, while another ear gave but six barren stalks or less than two per cent. The stalks from the grains on one ear of corn contained



The right way to fill a silo

106 suckers while the stalks from another ear were entirely free from suckers. One ear produced 55 bushels per acre, while another planted by its side yielded eighty-two bushels per acre.

The method of planting must be adapted to the section and nature of the land. Where the soil is high and dry or where very dry weather is likely to prevail during the growing season, planting corn in the water furrow is probably best. The soil can be gradually worked to the corn. Where the land is well drained, it is generally best to plant the corn on a level so that flat shallow cultivation may be practiced to the best advantage. On wet lands it is usually best to plant on beds and give the corn ridge cultivation.

The result of the experiment stations seem to indicate that the yield of corn in drills is slightly more than in hills.

The distance apart in rows and hills must be settled for each locality and each particular soil. The amount of the moisture and the fertility of the soil must be considered in deciding the distance in the drill. Where the soil is poor and dry, and the weather is usually dry during the growing sea-

son, best results are generally obtained by having the rows four to five feet apart, with one stalk every three feet apart in the row. Where such thin planting is necessary, it is generally preferable to plant soy beans, peanuts, or some other crop between the corn rows. Of course, on very fertile soil, the rows may be four feet apart and the corn from six to twelve inches in the drill.

How to Cultivate Corn

The cultivation of the corn crop should always be level and shallow, except in low undrained lands, where it may be necessary to plant on ridges and keep the middles clear to assist in drainage. The first cultivation should be made before the corn comes out of the ground, and the best implement to use is the harrow to merely break the crust and allow the corn to come up easily and uniformly. Then follow with a harrow or weeder, going both ways and after the corn gets six or eight inches tall, the two horse cultivator, which enables the operator to cultivate both sides of a row at once.

It is always much easier and more satisfactory to prevent the growth of weeds than it is to destroy them after they have attained a firm fast hold. The section steel harrow or the weeder are the implements to use in cultivation on light lands full of humus. For later cultivations after the corn gets tall, use the small tooth one-horse cultivator. Worked in this way, the roots are unharmed and the moisture is kept right where they seek it.

Many carefully made experiments have shown that the stalks, leaves and shucks of corn, have a feeding value equal to the grain. Of course, if we let the stalks stand in the field until the grain is fully matured, the stover will be of very little value. But if the corn is cut while the fodder is still partially green, that is, as soon as the ears are well glazed and is cured in the shocks, the fodder is of far more value for feeding.

Corn for the Silo

The most important and valuable advance step in connection with the corn crop in recent years, has been the use of the silo into which the nearly mature green corn is cut, put up and preserved in a succulent state for winter feeding and for tiding over a drought in the summer when the grasses fail in the pastures. The silo is indispensable to the breeder of either beef or dairy cattle.

Where it is common to gather the grain only and then turn the cattle into the field to glean the fodder, that left standing in the frost soon becomes practically worthless. The cattle ranging over the soft and wet ground, puddle the soil and do serious injury to it in the future cultivation. Then, too, the land is left bare all winter, and loses fertility in winter rains, when it should have the green cover crops on it at all times.

Modern machinery has greatly lessened the labor of cutting and shocking the corn. We now have machines to cut and bind the corn and we have the huskers and shredders that separate the corn from the stover and tear up the whole stalks and leaves into such a shape that not only is a far larger portion eaten, but the waste part is in a shape that it makes valuable bedding.

Corn

COST OF GROWING PER ACRE

Land rent.....	\$ 4.00
Seed.....	.25
Plowing.....	2.00
Fertilizer.....	2.00
Discing.....	.34
Dragging.....	.48
Planting (horse planter).....	.25
Cultivating.....	1.62
Cutting (corn binder).....	.52
Shocking and tying.....	.40
Twine.....	.21
Cutting stover.....	3.31
Hauling to barn.....	1.00
 Total.....	16.38
35 bu. loss in fertility.....	<u>13.25</u>
 Total cost to farmer.....	\$29.63
 INCOME	
35 bu. at 73c.....	\$25.55
1.77 ton stover at \$3.00.....	<u>5.31</u>
 \$30.86	

Remedies for Corn Weevil

Select corn with hard grains.

Select ears with heavy shuck, completely drawn over end of ear.

Husk corn and put in tight crib.

Put carbon-bisulphide in pan on top of corn.

Draft Horses and Mules

The Agricultural Development of the South Depends Largely Upon the Use of Improved Farm Machinery

We must diversify our crops and keep our money at home to build magnificent homes, churches, school houses, and good roads, and to educate our children and fill our banks to overflowing; keep out of debt and insist on getting all that we buy at the lowest price for cash; increase the fertility of our soils by reducing washing to the minimum, by deep plowing and turning under vegetable matter, a rotation of crops, including leguminous crops, and the addition of barnyard manure, phosphorus and potash when needed; plant the most prolific seed instead of seed that have run out; use economic plants, such as legumes, and small grains and sorghum for feed instead of so much expensive corn; use commercial fertilizers judiciously; drain our lands better; give our soil better preparation and then frequent and shallow cultivation, but the use of more horse power is probably the most effective remedy for poverty in the South. The big key to agricultural reform in the South is more horse power and labor-saving farm implements on the farm. The average farm worker toils with a small mule or horse and his total annual income is only about \$148.00. In Iowa the average farm worker uses nearly four large horses and produced \$611.11 annually, exclusive of stock. An analysis of the different states show a much smaller use of power on Southern farms than in any other section of the country, and consequently, less use of labor saving farm implements and a correspondingly lower earning capacity of the farmers.

Probably the chief cause of poverty in the South is the one-horse breaking plow. The small mule and a small turning plow is a guarantee of shallow soil devoid of vegetable matter or humus. A shallow soil devoid of vegetable matter means small crops and poor farmers. The soil should be deep and full of humus in order to increase the storage capacity for water and thereby enable it to hold enough water to carry the crop through the longest drought



This means shallow plowing — a poor seed bed — poor crops

in the summer though heavily fertilized. We cannot plow deep or turn under the corn and cotton stalks, oat and pea stubble, grass and weeds with a one-horse plow.

One Horse Plows and Cultivators Poor Practice

Cultivating crops with one-horse plows and one-horse cultivators is a slow process and should not be practiced unless the land is full of roots and stumps. This is an age of labor-saving farm implements and no farmer can afford to walk down each middle three or four times at each cultivation. The one-row cultivator should be used by every farmer.

The farmers of the South should raise the necessary horse power. Millions of dollars are leaving the South each year, for the purchase of mules and horses. Few small farmers can afford to keep mules and geldings—at least half the work stock on southern farms should be draft mares, actively engaged in heavy work and colt production. It is a great economic waste not to use one or more draft mares on every farm.



The modern method of preparing the soil

The man who employs mules or geldings in farm operations receives in return only their labor. Mares employed for farm work, if intelligently handled, can do all the work that is required and will produce in addition a considerable number of colts, which rapidly develop into marketable animals, thereby adding to the farm income.

Brood Mares for Work Animals

It is generally considered that three brood mares must be kept to do the same work that can be done by a pair of mules or geldings of equal strength, but the difference in feed cost is slight, and the value of the colts produced off-sets such difference in feed costs with a considerable balance to spare. It is perfectly clear that when work done on a farm by two geldings or mules, is equally as well done by three mares at a very slight expense in feed cost

and when such extra feed cost is offset with a balance of \$100 or \$150 to spare, that it is an economic waste not to use mares.

The man who uses mares and produces colts, adds to his own wealth and to that of the community where he resides.

We must get pure bred draft sires if we are to build up our present undersized stock of mares into good sized, well built draft mares for farm work and colt production. Of course, there is a splendid opportunity at the present time for many southern farmers to purchase such young draft mares as are suited to southern conditions, but we cannot go north and west and buy young grade draft mares as cheaply as we can grow them. Furthermore, we cannot purchase a sufficient number of young draft mares to make much progress within two or three generations.



A tractor turning four furrows

The colt from first class draft sire and one of our small mares will usually weigh 1,000 to 1,200 pounds. Two or three successive crosses with pure bred draft sires will build this undersized stock up into a good grade of draft mares weighing about 1,400 pounds.

Draft horse sires must not only have weight, but they must possess quality. It has been found that the heavy quality will perform more work with greater ease than will the horse of phlegmatic disposition and temperament. The draft horse that is suited for the South must possess quality. There must be no tendency to coarseness, heavy coats of hair, or sluggish disposition.

The prejudice that exists against the size of the draft horse is not well founded. The Tennessee Experiment Station uses heavy draft Percheron

mares with pronounced success. They perform heavy work at this station and on many farms throughout the entire summer of each year beside small southern grown horses and mules and without greater discomfort. Aside from being in harness the two mares at the Tennessee Station reared a heavy pair of colts that the Station refused \$400 for when six months old.

Place of the Mule in the South

The mule is one of the most vital cogs in the industrial, commercial and agricultural progress of the South. It is in consequence of his faithful service that the larger part of corn, rice and cotton, as well as numerous other crops are produced and transported to market.



Bailing hay with gasoline power

The mule is without rival for work in the logging camps. He excels as a beast of burden in the railroad camps, and for trucking and for delivery purposes in the cities. He possesses the ability to resist disease, and withstand the stress of severe labor on less and poorer feed than the horse. In many lines of work and particularly those just mentioned, the mule is decidedly superior to the horse and I have no quarrel with those who claim a mule is more economically fed and a more efficient work animal than a horse of equal weight. At the same time, it must be admitted that the mule is without pride of ancestry or hope of posterity and valueless for any purpose other than labor.

Light to medium weight draft mares with plenty of quality produce the highest priced mules on the market today. The lighter weight draft mare weighing from 1,400 to 1,600 pounds can be bought for less money on the northern markets than the weighty trotting or saddle bred mares. It is consequently a question of economics to use the draft mare with quality to produce our mules. That the draft mare produces the highest type of mules is shown by the fact that nearly all of the highest priced mules on the market are evidently from draft mares.

Blue ribbons on the mules at the State Fairs the last few years have always gone to the mules that were out of draft mares. There has been in

this respect an entire change from the practice that prevailed a few years ago when ribbons were tied on the light and more or less fine-boned mules.

"The sire is half the herd" is one of the old axioms in the live stock world and those who have paid close attention to the old sayings, all other things being equal, have prospered far beyond the breeders of scrubs. The mule is the product of the sire, and if this be true, we at once begin to understand the importance of having only large, pure bred jacks on the farms.



A pure bred sire is half the herd

Pork Production

If We Wish to Make A Success in Raising Hogs We Must Grow Forage Crops for Feed

We spend more money for pork than we do for education and religion. We send millions of dollars to the north and west for pork and pork products. We are paying fifteen cents a pound for pork and the records of the experiment stations and the actual experiences of hundreds of farmers show that pork can easily be produced in this territory for three or four cents a pound.

The first investment is small and the pig is the quickest money maker on the farm. He will live and grow fat on waste products that other stock will not eat. He is ready for market almost any time and will bring the top price if fat. He multiplies rapidly and if we only furnish him good pastures, forage crops, pure water and a little concentrated feed, he will do the rest.

We can no longer raise cotton to buy pork. We must raise cheap crops of peanuts, soy beans, cowpeas, sorghum, artichokes, red clover, rape and so on for hogs to graze. No man has ever been able to give a sensible reason for growing cotton to pay for bacon and lard, instead of growing cheap forage crops to raise hogs. No man has ever been able to give a sensible reason for feeding corn from weaning time to killing time instead of raising hogs on pasture, forage crops and cheap grain crops. If we wish to make the greatest success in raising hogs, we must grow cheap crops for the hogs to graze.

Hogs Must Have Pasture

Hog raising can seldom be made profitable without thoroughly good permanent pastures where the hogs can obtain the larger part of their coarser feed at a small cost and where they can have the exercise which is absolutely necessary to good health. Bermuda grass with lespedeza and vetch and one or more winter clovers will serve as a permanent pasture and furnish grazing the greater part of the spring, summer, and winter.

A permanent pasture is essential, but temporary grazing crops will do much toward reducing the cost of making pork. The Cotton Belt has a large number of crops easily grown, that are especially well adapted to the grazing of hogs and which furnish not only coarse forage, but also a large amount of the grain feed which is needed. A selection can be made which will give a succession lasting nearly or quite through the year.

It may be a needless waste of space to suggest rotations of crops, since different soils, different localities, and different conditions will necessitate different series of crops; but it will probably be of help to submit several sample rotations to be used as a basis of study. It is not expected either one of the rotations will be suited to all needs, but by using them as a basis and substituting and adding such crops as are most available, any man can plan a rotation suitable to his needs and conditions and provide pasture for his hogs 365 days in each year.

Good Forage Crops for Hogs

Beginning in the fall for the purpose of furnishing winter and early spring grazing, oats and vetch planted in September or October will furnish grazing through December, January, February, March and part of April. Dwarf Essex rape planted in September or October will furnish grazing in December, January, February and March.

Artichokes, Chufas and Pindars, planted in May will furnish grazing in November, December and January. Vetch and the winter clovers sown in September or October can be pastured in February, March and April. Dwarf Essex Rape and sorghum planted in February and March will furnish grazing in April and May.

After harvesting the oats, numerous valuable grazing crops may be planted. Mexican June Corn and cowpeas may be planted on a portion of the land and peanuts and sweet potatoes on the remainder. The cowpeas, peanuts, and Mexican June corn may be used to finish off the hogs for the market.

At the Louisiana Station, peanuts planted after oats gave an average of 400 pounds of pork and this added to the 200 pounds from grazing the oats made a total of 600 pounds of pork per acre and a crop of oats besides. Sweet potatoes gave from 400 to 750 pounds of pork per acre. If we take an average at 500 pounds and add to this 200 pounds from grazing the oats which preceded the sweet potatoes, we have 700 pounds of pork per acre, for one season plus the crop of oats harvested.

The following is taken from Bulletin No. 107, by Professor J. W. Fox of the Mississippi Delta Station: "We wish to call particular attention to the importance of a pea field, planted in corn at the last working, as a factor in cheap pork production. We made an experiment last fall to determine the value of such a pasture, the result of which should be very gratifying to the Southern farmers, who have a monopoly of such pastures. The Northern farmers cannot grow peas planted in corn, but must give them the use of the land during the entire growing season.

Hogs Thrive on Field Peas

"After the corn was gathered, 51 pigs were turned into the pea field of 17 acres. They had no additional feed. The pork made from the peas was 2,893 pounds or 170 pounds per acre. At six cents per pound, this gives a value for the peas of \$10.20 per acre. And this is net, as the hogs did their own harvesting. Also the manure and humus from the stalks, vines, and seed, were left on the land. By tests made at the station for two years to determine the value of the peas grown in the corn as a fertilizer, it has been found that they increased the succeeding cotton crop by 110 pounds of lint per acre."

At the Alabama Station, cowpeas grown after oats on very poor hill land produced 350 pounds of pork per acre. When grown after oats on bottom land the cowpeas produced 483 pounds of pork per acre. An acre of Spanish peanuts grown after oats on poor gravelly land produced 600 pounds of live weight of hogs.

A certain amount of grain feed is needed to grow hogs with the greatest profit but it should be used only to supplement the feeds which the hogs harvest for themselves in the pastures and fields. At least one-fourth of a full grain ration or one pound to every 100 pounds of live weight should be given. When young, the grain feed should be such as will furnish material for bone and muscle and not such as will produce an excess of fat. There should be a gradual change from the nitrogenous, muscle, making foods given the pig to fat-making foods. Grain must not on any account be omitted.

Pasture grasses and forage crops that will grow healthy, vigorous hogs of good quality must ever remain the basic factor in successful pork production in the South. But we cannot afford to build up a reputation for the production of an unsatisfactory carcass such as is produced by grasses, cowpeas, soy beans and peanuts.



Nothing better than alfalfa for hog pasture

However, this can easily be remedied by feeding the hogs for not less than three weeks nor more than four weeks before marketing on a ration of three parts of corn or three pounds to every 100 pounds of live weight and one of cottonseed meal. The cottonseed meal added will not only make the ration the very cheapest in point of increased gains, made, but will also improve the carcass by hardening the fat.

Hog cholera is the limiting factor in pork production. The yearly loss from cholera amounts to more than fifty millions of dollars. Men of science have been preparing for a war to death on hog cholera for many years and when it breaks out in your herd, be sure and get in touch with a good veterinarian and urge him to get busy with serum. It will probably usually pay to sell everything fit to go except brood sows. Take your chances on

the brood sows and then breed only from sows that have recovered from the cholera. These are usually immune and are very valuable for breeding purposes. Clean out, disinfect, and go on.

The hog louse is the only insect which causes much trouble in raising hogs. Coal oil is sure death to every louse it touches, but does not always kill the eggs. Three applications of a mixture of two parts of lard to one part of coal oil at intervals of a week, will destroy all lice on the hogs. Thoroughly clean the sleeping places and sprinkle with coal oil.

It is, of course, understood that the scrub hog is unfit for pork production. In theory, it might be best to do away with all scrub hogs at once and keep only pure bred ones. In practice the theory will not work out. The scrub hogs would all have to be sold at pork prices and pure breeds to take their places could be purchased in very limited numbers only and at prohibitive prices for the average farmer. The rational way to get a good lot of hogs is to breed pure bred males to the common females and then to the half and three quarter bloods, and continue until they are pure bred as far as all practical purposes are concerned.

Pasture and Forage Make Cheapest Pork Pork per Acre

Oats, followed sweet potatoes.....	930 lbs.	La. Sta. Bul. 123
Oats followed by peanuts.....	650 lbs.	La. Sta. Bul. 123
Cowpeas planted in corn at last working	483 lbs.	Miss. Sta. Bul.
Sweet potatoes after oats.....	490 lbs.	La. Sta. Bul. 123
Alfalfa.....	596.8 lbs.	Mo. Bul. 95
Red clover.....	572.2 lbs.	Mo. Bul. 95
Corn hogged off.....	395.2 lbs.	Mo. Bul. 95
Rape.....	394.0 lbs.	Mo. Bul. 95
Cowpeas.....	224.9 lbs.	Mo. Bul. 95

Forage Crops for Hogs

MONTHS TO BE USED	CROPS
January and February.....	Fall-sown rape and chufas.
March 1 to April 15.....	Fall-sown rape, vetches and oats, rye, wheat, etc
April 16 to May 1.....	Vetches and oats, crimson clover, oats, and wheat.
May.....	Spring-sown rape, vetches and oats, wheat, and the usual pastures.
June.....	Spring-sown rape, stubble fields, turf oats, and the usual pastures.
July and August.....	Sorghum, early varieties of cowpeas, and the usual pastures.
September, October, and November.	Spanish peanuts, cowpeas, sweet potatoes, and sorghum.
December.....	Chufas and fall-sown rape.

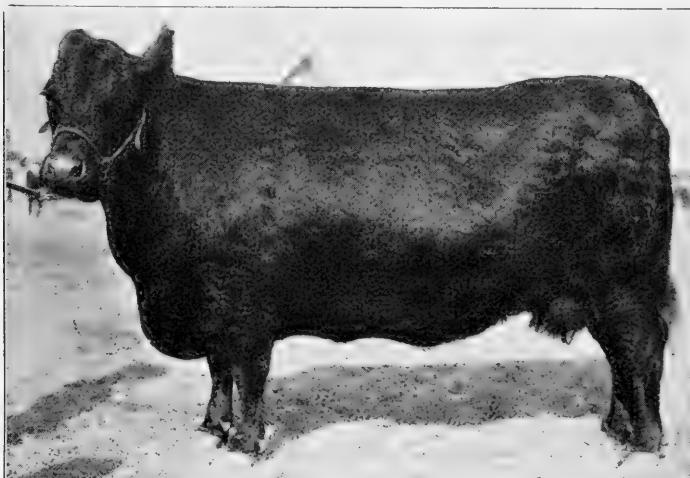
Bulletin 93, Ala. Station.

Live Stock Growing

Live Stock Farming Leads to a Diversified System of Agriculture

We have between the average and the best in farming in the Cotton Belt an attainable 1,000 per cent. This difference of 1,000 per cent against the average farmer is due wholly to conditions which he can easily control with the necessary knowledge. Every corporation and business man interested in the welfare of the country, should join forces with the United States Department of Agriculture, Agricultural Colleges, Experiment Stations, State Departments of Agriculture and other forces and conduct great Educational Campaigns until the foolish and criminal wastes that are going on every year by reason of unscientific methods of farming is a thing of the past.

Our farmers can easily grow twice the average yield of our staple crops. This increase would pour many millions of dollars annually into our industrial



Galloway cow—a good beef type

channels. Such an addition could not be made without touching every corporation, every banker, every storekeeper, every doctor, every lawyer, every editor, and in fact, every person in the country.

During the last ten years our acre yield increased, but not half as much as the increase of population. Therefore, there is every inducement to do good farming, and to do good farming, we must decrease the number of acres of cotton and increase the number devoted to pastures, forage crops and live stock. We have all heard the old Dutch proverb quoted before, but we cannot quote it too often: "No grass, no stock — no stock, no manure — no manure, no crops." Holland is almost entirely a grass and stock country and lands are worth on an average of \$500 per acre. These people have found that they can make more out of land from grasses and live stock than they can by cultivating it.

Unnumbered acres of hill land in the Cotton Belt are making less than one-third bale of cotton per acre and at the same time making poverty for those tilling them. The cost of commercial fertilizer applied annually is appalling. The Razor-back terraces, covered with weeds, grass and briars, and the circled and short rows prevent the use of labor-saving implements.

Millions of acres of poor hillside land now producing less than one-third bales of cotton per acre should be plowed deep, well fertilized with acid phosphate and some nitrogen and some potash, when needed, and planted in summer and winter legumes for, say two years, and then sodded in Bermuda grass, lespedeza, crimson and burr clovers. Only by this method and stock raising can our worn out gullied cotton lands be restored to fertility and only in this way can the people of our Southland become prosperous and contented.

More Grass and Less Cotton

We have worn out our lands in the quickest possible time by growing cotton, and rigidly excluding grasses, leguminous crops and live stock. We have



Calves make better farms

depleted the soil of vegetable matter and it has washed away. This poor soil means a poor people, and the poor people means bad roads, uncomfortable homes, poorly equipped farms, very little education, the credit system, and all that retards civilization.

The last census shows that our population increased 21% in the preceding decade, while our meat producing animals decreased more than 10%. We are facing a very serious situation. The meat-producing animals must be grown on the farm. The farmers will not long continue to grow stock at a loss. The conditions must be such that stock raising is profitable, or the farmers will sooner or later go out of the business entirely.

The Cotton Belt has an overwhelming advantage over every other section in live stock raising. We have great climatic advantages that permit outdoor pasturing and feeding during the whole, or the greater part of the year. We

can obtain large yields of oats, leguminous crops, Johnson and Bermuda grasses sorghum cane hay, and an abundance of corn for making silage, the most economic form of carbohydrates.

The keeping of good live stock and the intelligent use of thoroughly good permanent pastures and grazing crops, and the economic use of the silo and cotton seed meal will make our lands rich, keep millions of dollars at home that are now sent to the North and West, and make our people prosperous.

The calamity howler says: "What about the lack of lime in the soil?" Dr. Tait Butler, probably the best posted man on southern agriculture, says in summing up a most excellent editorial on "Lime in Southern Feeds." We have shown: (1) That our soils are not deficient in lime as regards the land food requirements of our crops (2) That plants grown in the South have as much ash as the same plants grown elsewhere, and that the feed crops of the South, especially the legumes peculiar to the South, contain as high a per cent of ash as the feed crops of other sections; (3) That typical southern rations or those made up of typical southern feeds contain more ash than typical Northern feeds. The conclusion is, therefore, that while our animals fail to get the mineral matter they need, it is not because this material is deficient in our feeds, but because our animals do not get sufficient of our feeds.

Should Grow More Live Stock

In the Cotton Belt, live stock farming has been avoided mainly for two reasons: (1) Because all-cotton farming paid better until the soil became poor; (2) Because of the cattle tick. Now, millions of acres are too poor to grow cotton profitably and we can easily eradicate the cattle tick. Since the work of eradicating the tick was inaugurated, over two hundred thousand square miles have been cleaned for all time; this is an area over three times as large as Alabama. The tick injures the hide, reduces the milk flow at least ten per cent, make it very difficult to fatten cattle, prevents the introduction



Dipping vat on I H C demonstration farm at Brookhaven, Mississippi

of good cattle to breed up our native cattle, lowers the price of our cattle on the markets and destroys more than enough cattle every year to pay for its eradication.

The growing of crops that impoverish the soil and the selling of all the crops grown and the attempt to keep up the productivity of the soil by the use of commercial fertilizer, must give way to a new system of farming. In this new system of farming we will practice a rotation of crops including leguminous crops and the crops grown will be largely fed to good live stock, manure carefully saved and applied to the soil, and the necessary commercial fertilizer judiciously applied.

It is the function of live stock on the farm to furnish a market the crops for that are grown, enabling the farmers to convert grasse, forage crops, cowpeas, and soy beans, and so on into higher priced finished products and to return to the soil the plant food taken from it. Probably the greatest need of the farmers in the Cotton Belt at present is, more grass, more leguminous crops, and more live stock, and those who assist in eradicating the cattle tick and in otherwise helping to create conditions that will enable farmers to grow two good animals in the place of one scrub is surely as great benefactors as those who cause two blades of grass to grow where only one grew before.

Live stock should certainly be given a prominent place in the agricultural development of the Cotton Belt. Next to having good and intelligent people in a country, good live stock is probably of the most importance... This being true, every state in the Cotton Belt should encourage the growing of more and better live stock by eradicating the tick and by teaching improved methods of stock breeding and raising.

We Must Grow Live Stock Why?

1. To make the soil fertile.
2. To get the horses and mules necessary for economical crop production.
3. To secure milk, butter, beef and pork for home use.
4. To furnish profitable employment the year round.
5. To add to the income on the farm.

How?

1. Have good permanent pastures.
2. Grow forage crops, principally leguminous crops.
3. Make use of waste feed.
 - a. The corn stalks,
 - (a) Silo
 - (b) Shredder
 - b. Save the Straw.
4. Provide shelter and shade.

Feeding Beef Cattle

Grass is of great value as an adjunct in finishing cattle.

Silage is of high feeding value and should be used liberally as a roughage.

Silage is a laxative and should be fed with a small amount of dry roughage.
It is seldom advisable to grind the grain.
Cotton seed meal is the cheapest concentrate.

Value of Cotton Seed

Don't sell Cottonseed Meal — Feed it	
One pound of Cottonseed Meal equals 1.60 lbs of Cottonseed.	
One pound of Cottonseed Meal equals 1.92 pounds of Corn.	
One pound of Cottonseed equals 1.22 pounds of Corn.	
The Feeding value of a ton of Cottonseed Meal.....	\$28.56
The Manure from a ton of Cottonseed Meal consumed.....	19.13
Feed and Manurial value of Cottonseed Meal.....	\$47.69
Mississippi Bul. No. 60.	

Value of Silage

It is rich in nutrients especially suited for stock.
It is easily digested.
Its palatability is due to its aroma and succulence.
It aids in cooling the system.
It is a most excellent laxative and keeps the system free from effete material.

Feeding Beef Cattle

	Lbs. of beef
One acre of soy beans produced.....	540
One acre of cowpeas produced.....	327
One acre of corn produced.....	203

Grow soy beans and cowpeas to feed cattle and enrich the soil.
Tenn. Bul. 79.



A Partial List of Literature on Diversified Farming

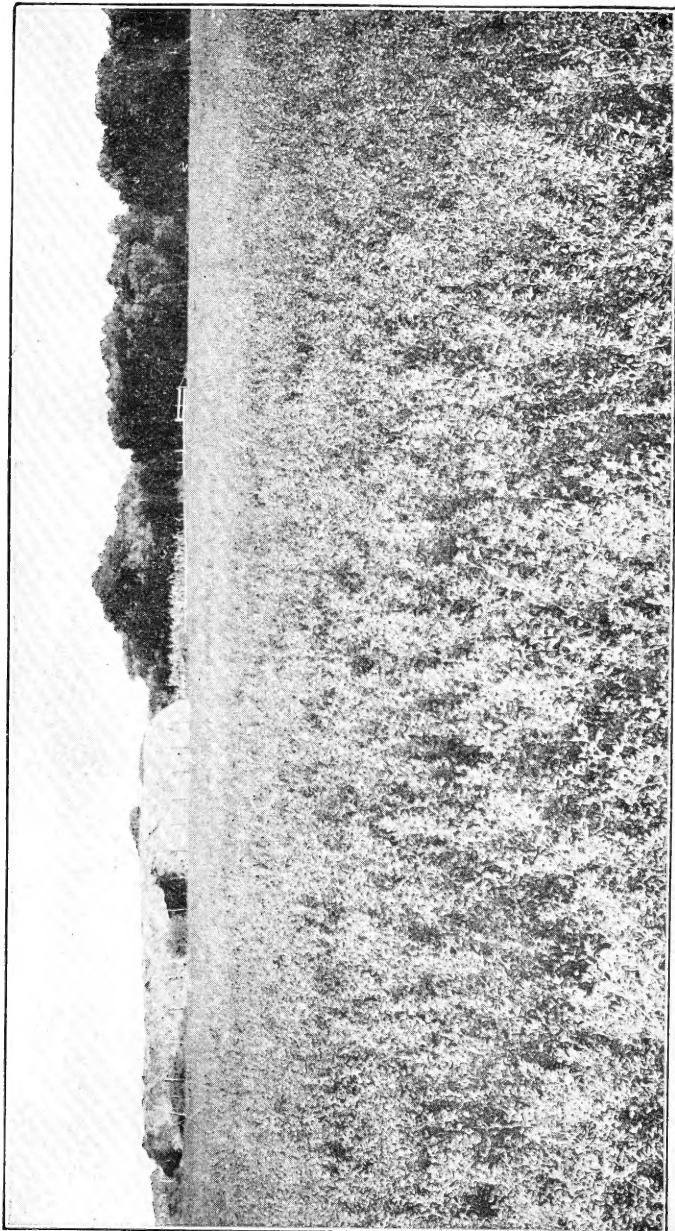
DIVERSIFICATION	Farmers' Bulletins Nos. 98, 144, 192, 242, 245, 299, 327, 370, 398, 437.
LEGUMINOUS CROPS	Farmers' Bulletins Nos. 121, 278, 315, 323, 455.
COWPEAS	Farmers' Bulletins Nos. 89, 124, 222, 225, 244, 309, 318. Alabama Expt. Sta. Bulletins 14, 107, 114, 118, 120, 122, 123. Louisiana Expt. Sta. Bulletins 40, 55, 72. Florida Expt. Sta. Bulletin 2. Georgia Expt. Sta. Bulletin 26. North Carolina Expt. Sta. Bulletin 182. Mississippi Expt. Sta. Bulletin 40. Tennessee Expt. Sta. Bulletin 96. Arkansas Expt. Sta. Bulletins 70, 77, 80.
PEANUTS	Farmers' Bulletins 227, 356, 431. Arkansas Expt. Sta. Bulletin 84. Florida Expt. Sta. Bulletin 87.
SOY BEANS	Farmers' Bulletins 78, 97, 309, 372, 514. Alabama Expt. Sta. Bulletin 114, 123. Kentucky Expt. Sta. Bulletins 98, 125, 161. Virginia Expt. Sta. Bulletin 145. Louisiana Expt. Sta. Bulletin 72. Tennessee Expt. Sta. Bulletins 23, 80.
VETCH	Alabama Expt. Sta. Bulletins 87, 96, 105. Louisiana Expt. Sta. Bulletin 72. Mississippi Expt. Sta. Bulletin 44.
VELVET BEANS	Farmers' Bulletin 102. Florida Expt. Sta. Bulletins 14, 60. Alabama Expt. Sta. Bulletins 104, 120.
LESPEDEZA	Farmers' Bulletin 441. Louisiana Expt. Sta. Bulletins 72, 130.
PASTURES	Farmers' Bulletins 66, 300. Tennessee Expt. Sta. Bulletins, Vol. 11, Nos. 2, 3, 4. Virginia Expt. Sta. Bulletin 193. West Virginia Expt. Sta. Bulletin 109.
OATS	Farmers' Bulletins 420, 424, 436. Alabama Expt. Sta. Bulletin 137, 173. Georgia Expt. Sta. Bulletin 72. Arkansas Expt. Sta. Bulletin 66. North Carolina Expt. Sta. Bulletin 212. Missouri Rept. for 1909.

CORN	Farmers' Bulletins 81, 229, 253, 313, 400, 414, 415. Virginia Expt. Sta. Bulletin 202. Texas Expt. Sta. Bulletin 92. Missouri Expt. Sta. Bulletin 106. Georgia Expt. Sta. Bulletin 78. Alabama Expt. Sta. Bulletin 53. Arkansas Expt. Sta. Bulletin 24.
HORSES	Bureau of Animal Industry 3, 124, 137, 170, 178, 186. Illinois Expt. Sta. 122, 150. Utah Expt. Sta. 107. Wisconsin Expt. Sta. 186. Pennsylvania Dept. of Agriculture, 181.
PORK PRODUCTION	Farmers' Bulletins 100, 133, 183, 205, 411, 438. Louisiana Expt. Sta. Bulletins 123. Missouri Expt. Sta. Bulletin 95. Alabama Expt. Sta. Bulletins 93, 154.
LIVE STOCK	Farmers' Bulletins 22, 71, 106, 124, 151, 184, 233, 241, 258, 349, 355. Tennessee Expt. Sta. Bulletin 79. Mississippi Expt. Sta. Bulletin 111.
CATTLE TICK	Farmers' Bulletins 258 261.
COTTON	Farmers' Bulletins 36, 48, 98, 285, 286, 302, 319, 326, 364, 370. Knapp's Method of Growing Cotton by Sovely and Mercier.
BOLL WEEVIL	U. S. Senate Document 305. Farmers' Bulletins 209, 211, 314, 344, 512.
RICE	Farmers' Bulletin 110.
DRAINAGE	Farmers' Bulletin 187.
DAIRYING	Farmers Bulletins 349, 355.
ALFALFA	Georgia Expt. Sta. Bulletin 51. Louisiana Expt. Sta. Bulletin 72. Tennessee Expt. Sta. Bulletin 28.

LIBRARY OF CONGRESS



0 002 595 319 8



Six tons of alfalfa to the acre